



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,209	06/20/2005	Jarmo Lindroos	04150.0019U1	7480

23859 7590 06/19/2006

NEEDLE & ROSENBERG, P.C.  
SUITE 1000  
999 PEACHTREE STREET  
ATLANTA, GA 30309-3915

EXAMINER
----------

CHOI, LING SIU

ART UNIT	PAPER NUMBER
----------	--------------

1713

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/526,209

Applicant(s)

LINDROOS ET AL.

Examiner

Ling-Siu Choi

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9, 15, 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 10, 13, 14, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This Office Action is in response to the Amendment filed April 3, 2006. Claims 11-12 were canceled and Claims 16-19 have been added. Claims 1-10 and 13-19 are now pending. Claim rejections under 35 USC 112 and the rejections of claims 1-9 and 15 under 35 USC 102 and 103 are withdrawn. The rejections of claims 10, 13-14 and 16 are maintained.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following rejection is based on the claim which can be interpreted to comprise a support.

3. Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Ernst et al. (US 5,932,514).

Ernst et al. disclose a process to prepare a catalyst for olefin polymerization, comprising the steps of (a) drying a hydrophilic inorganic oxide, (b) reacting the free

Art Unit: 1713

hydroxyl groups of the oxide completely or partially with aluminoxane in toluene, (c) subsequently reacting the modified oxide with a polyfunctional organic crosslinker to **form a particulate catalyst intermediate**, and (d) further contacting with a metallocene, wherein the polyfunctional organic crosslinker can be ethylene glycol, 1,4-butanediol diglycidyl ether, triethanolamine, or glycerol (abstract; col. 3, lines 21-36; col. 4, lines 24-45; Example 1). Thus, the present claim is anticipated by the disclosure of Ernst et al.

The following rejections are based on *In re Thorpe* for examining product-by-process claims.

4. Claims 10, 13-14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Fischer et al. [Makromol. Chem., Macromol. Symp. **66**, 191-202(1993)].

Fischer et al. disclose a catalyst for olefin polymereization, comprising (a) contacting 2,6-ditertbutyl-4-methyl phenol (BHT) and 2,2,6,6-tetramethylpiperidine (TMP) with methylaluminoxane (MAO) and then (b) contacting with a zirconocene in toluene (abstract; page 193, lines 5-7). It is noted that the catalyst is unsupported. Thus, the present claims are anticipated by the disclosure of Fischer et al.

5. Claim 10, 13-14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagy et al. (US 6,025,407).

Nagy et al. disclose a catalyst for olefin polmerization, comprising a metallocene, an aluminum-containing cocatalyst, and a Lewis base, wherein the aluminum-containing

Art Unit: 1713

cocatalyst is alkyl aluminoxane and the Lewis base includes ether and amine (abstract; col. 7, lines 59-67; col. 8, lines 1-67). It is noted that the catalyst is unsupported. Thus, the present claims are anticipated by the disclosure of Nagy et al.

6. Claim 10, 13-14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosch (US 5,908,903).

Rosch discloses a catalyst for olefin polymerization, comprising (A) a metallocene complex of the metals of the fourth, fifth, or sixth transition group of the Periodic Table of the Elements, (B) a compound forming metallocenium ions, and (C) a sterically hindered, organic Lewis base, wherein the compound forming metallocenium ions includes methyl aluminoxane and the sterically hindered, organic Lewis base includes amine (abstract; col. 6, lines 61-63; col. 7, lines 23-30). It is noted that the catalyst is unsupported. Thus, the present claims are anticipated by the disclosure of Rosch.

#### ***Allowable Subject Matter***

7. Claims 1-9, 15, and 18-19 are allowable over the closest references: Ernst et al. (US 5,932,514), Fischer et al. [Makromol. Chem., Macromol. Symp. **66**, 191-202(1993)], Brady III et al. (EP 0 630 910 A1), Canich et al. (WO 93/13140), Goode et al. (WO 98/20045), Nagy et al. (US 6,025,407), and Rosch (US 5,908,903).

A process to prepare an unsupported catalyst for olefin polymerization, comprising	
A	reacting an aluminoxane and a Lewis base in an optionally halogenated hydrocarbon solvent <u>to form a particulate suspensipon</u>
B	reacting the suspension with a metallocene complex in an optionally halogenated hydrocarbon solvent
C	isolating the catalyst
wherein the Lewis base is aliphatic or aromatic amine, ether, phenol, benzyl alcohol, ethylene glycol, glycerol, bisphenol, triethanolamine, butanediol, 4,4'-isopropylidenediphenol, 3-hydroxypropylene oxide, or a mixture thereof	

(summary of claim 1)

Ernst et al. disclose a process to prepare a catalyst for olefin polymerization, comprising the steps of (a) drying a hydrophilic inorganic oxide, (b) reacting the free hydroxyl groups of the oxide completely or partially with aluminoxane in toluene, (c) subsequently reacting the modified oxide with a polyfunctional organic crosslinker, and (d) further contacting with a metallocene, wherein the polyfunctional organic crosslinker can be ethylene glycol, 1,4-butanediol diglycidyl ether, triethanolamine, or glycerol (abstract; col. 3, lines 21-36; col. 4, lines 24-45; Example 1). However, Ernst et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Fischer et al. disclose a process to prepare a catalyst for olefin polymereization, comprising (a) contacting 2,6-ditertbutyl-4-methyl phenol (BHT) and 2,2,6,6-tetramethylpiperidine (TMP) with methylaluminoxane (MAO) and then (b) contacting

Art Unit: 1713

with a zirconocene in toluene (abstract; page 193, lines 5-7). However, Fischer et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Brady III et al. disclose a catalyst for olefin polymerization, comprising a metallocene, aluminoxane, and a Lewis Base, wherein the Lewis base is ether, alcohol [ethylene glycol, phenol], or amine (page 7, lines 30-33; claims 1-2). However, Brady III et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Canich et al. disclose a catalyst system comprising a monocyclopentadienyl Group IVB transition metal compound, an alumoxane, and a modifier, wherein the modifier is a Lewis base comprising ethylamine, diethylamine dimethylaniline, ethanol, and phenol (abstract; page 19, lines 23-36). However, Canich et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Goode et al. disclose an unsupported, liquid form catalyst composition comprising a single site catalyst, an activating cocatalyst, and an antifouling agent, wherein the antifouling agent includes ether, alcohol [ethylene glycol or phenol], and amine (abstract; pages 18-21). However, Goode et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising

Art Unit: 1713

forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Nagy et al. disclose a catalyst for olefin polymerization, comprising a metallocene, an aluminum-containing cocatalyst, and a Lewis base, wherein the aluminum-containing cocatalyst is alkyl aluminoxane and the Lewis base includes ether and amine (abstract; col. 7, lines 59-67; col. 8, lines 1-67). However, Nagy et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Rosch discloses a catalyst for olefin polymerization, comprising (A) a metallocene complex of the metals of the fourth, fifth, or sixth transition group of the Periodic Table of the Elements, (B) a compound forming metallocenium ions, and (C) a sterically hindered, organic Lewis base, wherein the compound forming metallocenium ions includes methyl aluminoxane and the sterically hindered, organic Lewis base includes amine (abstract; col. 6, lines 61-63; col. 7, lines 23-30). However, Rosch does not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP




Art Unit: 1713

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI  
EXAMINER

June 5, 2006